

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Shell Chemical LP – K-Units and Olefins Feed Preparation Unit
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 1136
Activity Number: PER20060014
Draft Permit 2151-V3**

I. *APPLICANT:*

Company:

Shell Chemical LP
Post Office Box 500
Geismar, Louisiana 70734

Facility:

EOEG-2 Unit
7594 Highway 75, Geismar, Ascension Parish, Louisiana
Approximate coordinates are Latitude 30 deg., 11 min., 65 sec.; Longitude 90 deg., 59 min., 15.4 sec.

Responsible Official:

Mr. Glenn N. Bucholtz, General Manager

II. *FACILITY AND CURRENT PERMIT STATUS*

Shell Chemical LP operates a chemical plant, Chalmette Refinery, L.L.C. (CRLLC) operates a chemical manufacturing complex consisting of the Olefins Units, Alcohol Units, Cogen Unit, Logistic Unit, Utilities Unit, M-Unit, PDO-1 Unit, EOEG-2 Unit and EOEG-3 Unit. Ascension Parish is currently designated as a nonattainment for all NOx and VOC. The Alcohol Units and the Olefins Feed Preparation Unit are part of a major source subject to the Part 70 operating permit program because the emissions from all the units and equipment is part of a greater than the major source emissions levels for criteria pollutants. In addition, these stationary sources emit more than 25 tons per year of aggregate TAPs.

This Part 70 operating permit is for the Alcohol Units (K2 thru 5) and Olefins Feed Preparation (OFP) Unit which operates under Permit Number 2151-V2 dated March 21, 2003.

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Renewal/Modification Part 70 permits that were issued by the department include:

| <u>Permit #</u> | <u>Units or Sources</u> | <u>Date Issued</u> |
|-----------------|-------------------------|--------------------|
| 2185-V2 | EOEG-3 Unit | 8/28/2006 |
| 3001-V3 | M-Unit | 8/3/2007 |
| 2057-V4 | EOEG-2 | 3/21/2007 |
| 2729-V1 | Cogen Unit | 5/16/2007 |
| 2136-V3 | Utilities | 7/3/2007 |
| 2669-V2 | Olefins | 7/23/2007 |

III. *PROPOSED PERMIT / PROJECT INFORMATION*

Proposed Permit

A permit application and Emission Inventory Questionnaire dated August 25, 2006 was submitted by Shell Chemical LP requesting a Part 70 operating permit renewal and modification. Other subsequent submittals dated April 30, June 19, and July 19 and 26, 2007 were also received.

Project description

The Olefin Feed Preparation (OFP) Unit utilizes internal olefin feed streams from the Shell Higher Olefin Process, SHOP-1 thru SHOP-3, Units. The OFP Unit converts the internal olefins into high solubility olefins (HSO) for feed to the Alcohol Units K-4 and K-5.

The facility proposes to modify the current permit as follows:

1. Incorporate the alternate monitoring, recordkeeping, and reporting per NSPS, 40 CFR 60, Subpart RRR in lieu of Subpart NNN for affected equipment, Emission Points NNN-44, NNN-45, NNN-51, NNN-52, and NNN-53. These alternative requirements were approved by EPA on February 7, 2002;
2. Update emissions based on most current emission factors, stack test data, calculation methodology, and comprehensive reassessment (combined all fugitive emissions) of the fugitive emissions based on component count; and
3. Update the Insignificant Activities and General Condition XVII lists to reflect the current operating conditions.

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Permitted emissions from the Alcohol and Olefin Feed Preparation Units in tons per year are as follows:

| Pollutant | Before | After | Change |
|------------------|--------|--------|----------|
| PM ₁₀ | 0.70 | 0.69 | - 0.01 |
| SO ₂ | 0.05 | 0.05 | - |
| NO _x | 9.84 | 4.02 | - 5.82 |
| CO | 958.13 | 981.60 | + 23.47* |
| VOC | 45.80 | 60.05 | + 14.25* |

* The increase in VOC and CO emissions is not due to any modifications but mainly due to the reconciliation, consolidation of all the fugitive emissions (K-2 thru K-5 and OFP), and based on updated monitoring and component count. In the past fugitive emissions were permitted separately for each unit. Nonattainment New Source Review (NNSR) is not required as the emissions increase is not due to any modification or change of mode of operation. Moreover, the increase in VOC emissions is less than the NNSR significance threshold.

IV. REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms conditions and standards are provided in the Facility Specific Requirements Section of the draft permit.

New Source Performance Standards, NSPS of 40 CFR 60

40 CFR 60, Subpart VV: This regulation applies to pumps, Compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, and flanges or other connectors that operate in VOC service in SOCM1 process units for which construction, modification, or reconstruction commenced after January 5, 1981. The streams to which the fugitive components are now being added do not contain organic hazardous air pollutants; therefore, this regulation does not apply. These components will be added to the existing leak detection and repair (LDAR) program under the HON equipment leak requirements.

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40 CFR 60, Subpart NNN: This regulation applies to distillation operations at a SOCMF facility. The modification to the existing HPEO column will increase the maximum hourly emissions and also inflict a capital expenditure. The facility shall comply with the requirements of 40 CFR 60, Subpart NNN by maintaining a Total Resource Effectiveness (TRE) Index value greater than 8.0.

40 CFR 60, Subpart RRR: This regulation applies to reactor process as at a SOCMF facility. The facility is not modifying any reactors due to this project; therefore the requirements of 40 CFR 60, Subpart RRR will not be triggered.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Synthetic Organic Chemical Manufacturing Industry

40 CFR 63, Subpart F, G & H: A chemical manufacturing process unit (CMPU) that manufactured one or more SOCMF chemicals listed in Table 1 of 40 CFR 63, Subpart F and that uses as a reactant or manufactures as a product, or co-product, one or more of the organic hazardous air pollutants listed in Table 2 of 40 CFR 63, Subpart F is potentially subject to the SOCMF HON.

The equipment leak provisions of the HON apply to all equipment that operates in organic hazardous air pollutant service. Fugitive components that are being added are subject to this regulation. The facility shall include all the affected fugitive components into the existing LDAR program or shall maintain a TRE greater than 8.0

Prevention of Significant Deterioration Applicability

The increase in emissions from K Units and the OFP Unit do not exceed the Prevention of Significant Deterioration (PSD) significance threshold; therefore, this project does not require netting or PSD review. The facility is located in a nonattainment area for NO_x and VOC. The increase in NO_x and VOC emissions do not exceed the Nonattainment New Source Review (NNSR) significance threshold of 25 tons per year. Moreover, the increase is without any physical modification or change in method of operation (combining and reconciliation of fugitive components) to the facility; therefore, NNSR is not required.

Air Modeling Analysis

No modeling was conducted as a part of this minor modification.

Comprehensive Toxic Air Pollutant Control Program-Chapter 51

Toxic air pollutant emissions from fugitives must be controlled to a degree that constitutes MACT. The facility complies with all applicable provisions of the Louisiana Air Toxics Program. The current emissions changes due to the project will be controlled by complying with the requirements of the HON, 40 CFR 63, Subpart G.

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Maximum Achievable Control Technology (MACT) requirements

The Louisiana Air Toxics Program (LA MACT) requires a major source emitting any Class I or II pollutant at a rate that exceeds the minimum emission rate for that pollutant to demonstrate compliance with the Maximum Achievable Control Technology (MACT) standards. Additionally, the Louisiana Air Toxics Program requires a major source emitting any Class I, II, or III toxic air pollutant greater than the minimum emission rate for that pollutant to determine its status of compliance with the applicable ambient air standard (AAS) defined for the pollutant.

The requirements of the LA MACT apply to the EOEG-2 Tank Farm Fugitive Components and the EOEG-3 Fugitive Emissions. The facility shall comply with the requirements of 40 CFR 63, Subpart H for the components that contain hazardous air pollutants.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

V. *PERMIT SHIELDS*

A permit shield was not requested.

VI. *PERIODIC MONITORING*

The Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

VII. *APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS*

See Permit.

VIII. *STREAMLINED REQUIREMENTS*

This permit does not include any streamlined requirements.

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IX. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting

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program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

RMACT – Refinery Maximum Achievable Control Technology

Sulfur Dioxide (SO₂) – An oxide of sulfur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.